

Product designation		2.0	3.3	4.0	5.0
<b>Technical data</b>					
Rated output - electrical <sup>(1)</sup>	kW <sub>el</sub>	2,0	3,3	4,0	5,0
Rated output - thermal <sup>(2)</sup>	kW <sub>th</sub>	6,0	10,1	11,2	13,0
Power modulation - electrical	kW <sub>el</sub>	1,1 - 2,0	2,0 - 3,3	2,0 - 4,0	2,5 - 5,0
Power modulation - thermal	kW <sub>th</sub>	4,3 - 6,0	7,5 - 10,1	7,5 - 11,2	8,6 - 13,0
Gas connection power	kW <sub>Hi</sub>	8,70	13,22	15,12	18,10
Liquefied Petroleum gas input	kg/h	0,68	1,03	1,17	1,41
Liquefied Petroleum gas input	l/h	1,25	1,90	2,18	2,60
CHP coefficient		0,33	0,33	0,36	0,38
f Primary energy factor <sup>(3)</sup>		0,652	0,524	0,490	0,457
PES	%	20,6	27,5	27,7	27,7
ErP energy efficiency label <sup>(4)</sup>		A+	A+	A+	A+
Sound pressure level L <sub>pA</sub> <sup>(5)</sup>	dB(A)	45	48	49	51
Sound power level L <sub>WA</sub>	dB(A)	60	63	64	66
Maintenance interval	op. hrs.	15.000	15.000	15.000	15.000
Oil interval	op. hrs.	n.a.	7.500	7.500	7.500
<b>Efficiency ratios</b>					
Electrical efficiency ratio $\eta_{el}$	%	23,0	25,0	26,5	27,6
Thermal efficiency ratio $\eta_{th}$	%	69,5	76,5	73,8	71,7
Total efficiency ratio $\eta_{total}$	%	92,5	101,4	100,2	99,3
<b>Heat extraction</b>					
Flow temperature $\pm 5$ °C	°C	75	75	75	75
Return flow temperature $\pm 5$ °C	°C	25-65	25-65	25-65	25-65
min./max. ambient temperature	°C	5/30	5/30	5/30	5/30
Pressure rating - water side	PN	3	3	3	3
<b>Electrical energy generation</b>					
Nominal voltage	V	400	400	400	400
Frequency	Hz	50	50	50	50
Nominal effective power PnG	kW <sub>el</sub>	2	3,3	4	5
Apparent power S <sub>E max</sub>	kVA	2,8	4,8	5,5	6,6
Nominal voltage UnG	V	400	400	400	400
Frequency	Hz	50	50	50	50
Cos $\phi$ uncompensated		0,72	0,69	0,73	0,76
Reactive power compensation <sup>(6)</sup>	kVar	1,36	2,07	2,07	2,99
Number of steps		1	1	1	1
Degree of choking or resonance frequency		-	-	-	-
Cos $\phi$ acc. to VDE-AR-N 4105 quadrants II, III <sup>(6)</sup>		0,95	0,95	0,95	0,95
Rated alternating current I <sub>r</sub>	A	4,01	6,90	7,91	9,50
Rated alternating current I <sub>r</sub> cos $\phi$ 1	A	2,9	4,8	5,8	7,2
Rated apparent power S <sub>rE</sub>	kVA	2,8	4,8	5,5	6,6
Short-circuit alternating current Alternator I <sub>k</sub> "	A	29,5	46,7	46,7	46,7
Grid short circuit power with UnG Sk"	kVA	20,3	32,2	32,2	32,2
Start-up current I <sub>k</sub> approx.	A	26	39	39	39
<b>Motor</b>					
Motor manufacturer		YANMAR	YANMAR	YANMAR	YANMAR
Number of cylinders		3	3	3	3
Displacement	l	0,7	0,7	0,7	0,7
Air-fuel ratio $\lambda$		1,0	1,0	1,0	1,0
Engine oil - RMB/ENGINE Oil	l	30	30	30	30

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<b>Generator</b>					
Generator manufacturer		EMOD	EMOD	EMOD	EMOD
Generator type		asynchronous	asynchronous	asynchronous	asynchronous
Motor start-up		provided	provided	provided	provided
Speed	rpm	1.020	1.540	1.540	1.540
<b>Supply and exhaust air</b>					
Combustion air requirement	m <sup>3</sup> /h	11	17	19	23
Module ventilation flow rate	m <sup>3</sup> /h	100	100	100	100
Total air requirement of module	m <sup>3</sup> /h	111	117	119	123
Permissible counter-pressure of exhaust air system max. <sup>(7)</sup>	Pa	150	150	150	150
min./max. intake air temperature	°C	5/30	5/30	5/30	5/30
Min. cross section without hydraulic resistance	cm <sup>2</sup>	250	250	250	250
<b>Flue gas</b>					
Flue gas temperature <sup>(8)</sup> / max.	°C	50 / < 110	50 / < 110	50 / < 110	50 / < 110
Flue gas mass flow rate - damp	kg/h	12	18	20	24
Flue gas volume flow - dry	Nm <sup>3</sup> /h	9	14	16	20
Delivery pressure flue gas max.	Pa	150	150	150	150
Delivery pressure flue gas cascades max.	Pa	150	150	150	150
Delivery pressure max. for flue gas and exhaust air combination	Pa	150	150	150	150
Emissions Nox	mg/kWh	< 240	< 240	< 240	< 240
<b>Dimensions &amp; weight</b>					
Dimensions of module L x W x H	mm	1.093x613x1.100	1.093x613x1.100	1.093x613x1.100	1.093x613x1.100
Weight approx. (including operating resources)	kg	450	450	450	450
<b>ErP-Label</b>					
ErP energy efficiency label <sup>(4)</sup>		A+	A+	A+	A+
ErP energy input <sup>(4)</sup>	kWh <sub>HS</sub>	9,66	14,67	16,78	20,09
ErP efficiency ratio - electrical $\eta_{el,HS}$ <sup>(4)</sup>	%	20,7	22,5	23,8	24,9
ErP efficiency ratio - thermal $\eta_{th,HS}$ <sup>(4)</sup>	%	62,6	68,9	66,5	64,6
ErP efficiency ratio - total $\eta_{total,HS}$ <sup>(4)</sup>	%	83,3	91,4	90,3	89,5
Room controller category <sup>(4)</sup>		2	2	2	2
$P_{designh}$ <sup>(4)</sup>	kW <sub>el</sub>	2,3	3,9	4,3	5,0
$Q_{HE}$ <sup>(4)</sup>	kWh	4.726	7.327	7.614	8.498
$P_{SB}$ electrical power requirement - standby <sup>(4)</sup>	kW <sub>el</sub>	0,02	0,02	0,02	0,02
Electrical power requirement - partial load <sup>(4)</sup>	kW <sub>el</sub>	0,05	0,16	0,16	0,16
$P_{el,max}$ Electrical power requirement - full load <sup>(4)</sup>	kW <sub>el</sub>	0,05	0,16	0,16	0,16
$P_{stby\_CHP}$ Thermal standing losses <sup>(4)</sup>	kW <sub>th</sub>	0,20	0,20	0,20	0,20
Electrical power requirement - standby <sup>(4)</sup>	kW <sub>el</sub>	0,01	0,01	0,01	0,01
$\eta_S = \eta_{son} - \Sigma(F1-F5)$ <sup>(4)</sup>		101,6	110,4	117,1	122,4
Net output - electrical	kW <sub>el</sub>	1,95	3,14	3,84	4,84

1) Performance data in accordance with ISO 3046/I-2002, tolerance +5 % / -20 %

2) Thermal performance data tolerance 8%

3)  $f_{pe}$ -current = 2.8 displacement mix per DIN V 1859, DIN V 4701-10, GEG (attachment 4 to § 22 section 1) valid from 11.2020

4) In accordance with EU Regulation 811/2013; 813/2013

5) Test bench measurement at 1 m interval in front of the CHP

6) Only when using the optional compensation (not required for neoTower® 50.0)

7) Exhaust air (without flue gas) does not have to be extracted "via the roof"

8) At a return temperature of 35 ° C and optimum operating conditions, tolerance 5%

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<b>Control cabinet</b>	Fully equipped for seamless CHP unit operation with all necessary measurement and control equipment in bivalent operation. Dimensions control cabinet 600x600x200 mm; Approx. weight: 30-33 kg Connection cable CHP control cabinet standard 3m
<b>Electrical connections</b>	Supply line to control cabinet: 5x2,5mm <sup>2</sup> Cu up to max. 50m (fuse 16 A slow blow) max. terminal area 4mm <sup>2</sup>
	Temperature sensor cable: min. 2-08 JY(ST)Y up to 15 m length (2x1,5 mm <sup>2</sup> up to 40 m length) Control cables pump: 3x1,5 mm <sup>2</sup> ; RJ45 Patch cable in CHP connector
<b>Reactive current compensation</b>	Fixed compensation without reactors (detuned)
	Operating voltage: 230 / 400 Volt, 50 Hz
	Integrated capacitor contactor
	Discharging of approx 40 seconds must be considered
	Limiting temperature -10°C up to +35°C (average 24 h) +40°C (short-term max.)
<b>Gas pressure [mbar / hPa]</b>	Sheet steel wall housing 400x300x210mm (HxWxD)
	Gas resting pressure before gas regulator: 20 - 50 Flow pressure ≥ 18
<b>Regulations and standards</b>	Complies with the pertinent EU Directives for CE certification
<b>Connections</b>	Gas: 1/2" internal thread
	Heating supply line: 1" ball valve / PN 3.0
	Heating return line: 1" ball valve / PN 3.0
	Flue gas: DN80
	Integrated exhaust system
	Note: It is important to ensure that all terminals are connected via a flexible connection, in order to ensure vibration isolation. Residual pressure head secondary pump 0,7m
<b>Method of operation</b>	Mains parallel without emergency power, heat operated
	Use of electricity: Own requirement and infeed into the grid of the energy supply company, optional electricity-optimised modulation
	Heat usage automatically regulated in monovalent or bivalent operation with buffer tank; optionally heat-optimised modulation
<b>Indicators and switches/buttons</b>	Operation of the internal control and monitoring programs via central control unit (touchscreen for quick access to important functions)
	Back-lit graphical colour display with visualised system diagram and indicators for: temperature memory, motor, return line, hot water, interior, oil, flue gas, indicator for current power, water pressure, operation hours, generated energy, maintenance instructions and error notifications
	Switches/buttons: master switch, Emergency stop, Electric vehicle (Efv) charging data button, maintenance button
<b>RMB/Report</b>	Global live data tracking visualised in installation diagram, individual password protection, data logging with daily, weekly, monthly and annual report in graphical format, remote maintenance, remote monitoring, evaluation and reporting
<b>Water quality</b>	Motor circuit: 40% glycol, 60% water per VDI Regulation 2035. Operational pressure warm: 2.0 bar. Operational pressure cold: 1.8 bar. Primary pressure expansion vessel cold: 1.0 bar. Heating circuit ("secondary circuit"): water volume 11 l, free from mechanical impurities and as a minimum in accordance with quality requirements of the Group 2, VDI Regulation 2035 Conductivity < 100µS/cm Water hardness < 1° dH 8.2 > pH-value < 9 Deviations cause severe damages!

Deviating values depending on environmental and operating conditions.

Technical modification, design deviation and errors excepted.